

REMARKS

Claims 1-15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Trefonas in view of Morita.

As amended, claim 1 calls for a semiconductor substrate, and a Langmuir-Blodgett chemically amplified photoresist, including a non-ionic photoacid generator bonded to the hydrophobic region of an amphipathic molecule, formed over said semiconductor substrate.

As stated in the Office action, Trefonas does not specifically disclose a Langmuir-Blodgett chemically amplified photoresist. The molecules in a Langmuir-Blodgett film are amphipathic—they have a hydrophilic region and a hydrophobic region. As a result, a Langmuir-Blodgett film has an ordered structure when exposed to water. Specifically, the hydrophobic regions extend away from water where as the hydrophilic regions are water-loving. Pursuant to amended claim 1, the Langmuir-Blodgett chemically amplified photoresist includes a non-ionic photoacid generator bonded to the hydrophobic region of the amphipathic molecules. Advantageously, a photoresist layer of some embodiments of the present invention may have a high degree of vertical orientation and alignment, which may improve line edge and line width roughness. Furthermore, the highly oriented photoresist molecules of the present invention may control the distribution of the photoacid generator in the photoresist and in subsequent diffusion paths during exposure processes.

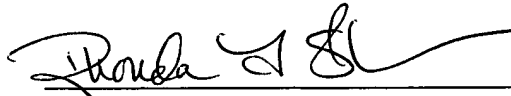
In contrast, the photoresist compositions of Trefonas contain a resin binder and a blend of at least one ionic photoacid generator compound (PAG) and at least one non-ionic PAG. See, Abstract and column 1, lines 59-67. It is respectfully submitted that the PAG blends disclosed by Trefonas would not be applied by the Langmuir-Blodgett method to obtain the structure of claim 1. That is, the introduction of ionic PAGs may disrupt the hydrophobic interactions of the Langmuir-Blodgett film. As such, claim 1 and claims dependent thereon are believed to be patentable over Trefonas in view of Morita.

Under a similar analysis, claim 7 and claim 13 are also believed to be patentable.

In view of the amendments and remarks herein, the application is believed to be in condition for allowance. The Examiner's furtherance toward this end is respectfully requested. The Commissioner is authorized to charge any additional fees, including extension of time fees, or credit any overpayment to Deposit Account No. 20-1504(ITL.1054US).

Respectfully submitted,

Date: October 26, 2004

A handwritten signature in black ink, appearing to read 'Rhonda L. Sheldon', written over a horizontal line.

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